

# *Representative* DRUGS of INDIA

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H.R.H. THE PRINCE OF WALES.

*With Compliments of*

B. K. PAUL & CO., Calcutta.





*These are to Certify that I have appointed  
Messrs B. K. Paul and Company  
into the Place and Quality of Chemists and Druggists  
to His Royal Highness The Prince of Wales*

*To hold the said Place so long as shall seem fit to the  
Comptroller of His Royal Highness for the time being.*

*This Warrant is granted to Shri Sankar Paul,  
Shri Mohan Paul and Gaur Shri Paul,  
personally trading under the Title of  
B. K. Paul and Company,  
and entitles the holder to use The Prince of Wales's Badge of Feathers  
or Coat of Arms in connection with the business but not to display  
the same as a Flag or Trade Mark*

*It is to be returned to the Comptroller in the event of any  
change taking place in the Firm from Death, Bankruptcy, Retirement,  
or other cause, or in the case of Limited Companies, the  
Director in whose name this Warrant is issued.*

*Lionel Halley*

*Comptroller  
to  
His Royal Highness The Prince of Wales.*

*Given under my hand and Seal  
at St. James's Palace,  
this First day of December 1922.*



## OURSELVES.

**I**N bringing our exhibits to the notice of the visitors to the British Empire Exhibition we may be permitted to say a few words in introducing our firm to those interested in Pharmacy in the East. Established in 1859 in Calcutta among old day surroundings which now no longer prevail in the second city of the British Empire, the firm during its 65 years of life has not only been able to move with the times, but has grown enormously in every direction. From the modest shop at 120 and 121, Khengraputty Street, the original home of the firm, the firm has now come to occupy half a dozen big offices and extensive warehouses in the heart of the city, besides an up-to-date factory and workshop in the suburbs of Calcutta. An idea of the buildings may be obtained from the fact that between them they command a floor-area of not less than  $1\frac{1}{2}$  lakh square feet,\* while the magnitude of the business may be best understood when it is said that there are more than fourteen departments of the firm employing a total number of nearly 1,000 men. Scientific apparatus and industrial chemicals, homœopathic medicines and books, ayurvedic medicines, drugs and other raw materials, disinfectants, photographic materials, surgical instruments, veterinary requisites, wines, spectacles, dentists' materials are dealt with in a different department each. For imported goods in general there are wholesale and retail departments. In the dispensing and outdoor departments many an Indian of modest means gets the best medicines at the cheapest cost and the poor and indigent are treated freely. The stocks of the almost infinite varieties of articles in pharmacists' lines held by the firm have excited the admiration of even the representatives of big foreign firms. Mr. Barton Kent, of Messrs. G. B. Kent & Sons, Ltd., of London, expressed the opinion so long ago as 1909 that "Butto Kristo Paul's Pharmacy in Calcutta sells more pharmaceutical preparations than any other chemist's shop in the world." Needless to say that since that time the business of the firm has considerably increased.

As introducers and distributors of foreign drugs, medicines, chemicals and goods of allied nature, the name of our firm is known to many manufacturers and dealers abroad, and it gives us great pleasure to say that our

\* 150,000 square feet.



business relations with some of the most prominent British firms in our own lines have always been very happy and cordial. Although our firm was originally started with the object of making drugs and medicines and everything connected with the practice of the Western System of medicine readily available in the Indian markets, new times have imposed new duties on us, and for some years past, in addition to our import business, we have been striving our utmost to utilise the vast resources of the country for the purposes of pharmacy, so far as that is compatible with efficiency.

If we have preferred to show here only one class of goods out of the numerous sorts of articles we deal in, it is in the hope that the crude drugs of India will be found to be most interesting to the visitors hailing from the distant parts of the British Empire. For it must be remembered that among the crude drugs there are only a few whose use is confined to medicine alone. The same stuff which relieves the pains of disease may also yield a dye, an essential oil, or may be employed in the arts and industries in several ways. Taken in this broad sense, some of the raw materials exhibited in our stall have great possibilities. The following pages will explain the medicinal properties of the drugs. As regards supplementary information, our agent or the attendant in the stall will be glad to furnish the same.

The avowed object of the present exhibition being the promotion of good feeling and a spirit of helpfulness between the men of the component parts of the great British Empire, nothing can be so desirable as a free interchange of thoughts as to the wants and necessities of the different countries whose representatives have come to meet in the grounds of this unrivalled show. In the few drugs and etc. we have exhibited here, which actually represent a very large number of varieties of raw materials as yet imperfectly known from an economic point of view, there lie the promise and potency of a large trade which may prove equally profitable to India as well as to her overseas customers. It is the earnest hope of the firm that visitors concerned with drug and allied trades will take more than a passing interest in our exhibits, any enquiries regarding which will be gladly and promptly replied to from our Head Office, if information available at our agent's office is not considered to be sufficient.

B. K. PAUL & CO.

*Head Office :—*

1 & 3, BONFIELD'S LANE,  
CALCUTTA, INDIA.

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N.B.—All prices given here are approximate and subject to fluctuations of the market. Quotations are per lb. and f.o.b. Calcutta. For large quantities special rates are given. Drugs not mentioned in this list but exhibited, are available only in Season and at rates ascertainable on enquiry. All orders should be accompanied by Bank references.

| TRADE NAME.                 | SCIENTIFIC NAME.                     | Approximate Price per lb. | TRADE NAME.                 | SCIENTIFIC NAME.                   | Approximate Price per lb. |
|-----------------------------|--------------------------------------|---------------------------|-----------------------------|------------------------------------|---------------------------|
|                             |                                      | s. d.                     |                             |                                    | s. d.                     |
| Acacia Bark .. ..           | <i>Acacia Arabica</i> .. ..          | - ½                       | Cardamom, fruits .. ..      | <i>Elettaria Cardamomum</i>        | 2 8                       |
| Acalypha, Indian .. ..      | <i>Acalypha indica</i> .. ..         | - 4                       | Cassia, purging, pods .. .. | <i>Cassia fistula</i> .. ..        | - 3                       |
| Aconite, Indian .. ..       | <i>Aconitum ferox</i> .. ..          | - 7                       | Castor Oil .. ..            | <i>Ricinus Communis</i> .. ..      | - 5                       |
| Ajowan Seeds .. ..          | <i>Carum Copticum</i> .. ..          | - 3                       | Catechu, black .. ..        | <i>Acacia Catechu</i> .. ..        | - 4                       |
| Arrowroot, E. I. .. ..      | <i>Curcuma angustifolia</i> .. ..    | - 6                       | Chaulmoogra Oil .. ..       | <i>Tharaktogenos Kurzii</i> .. ..  |                           |
| Arum, Indian, meal .. ..    | <i>Alocasia indica</i> .. ..         | 2 -                       | China Root .. ..            | <i>Smilax China</i> .. ..          | - 6                       |
| Arum, Elephant's Foot, meal | <i>Amorphophallus</i>                |                           | Chiretta, herb .. ..        | <i>Swertia Chiretta</i> .. ..      | - 6                       |
|                             | <i>complanatus</i> .. ..             | 1 6                       | Cinchona, bark .. ..        | <i>Cinchona Succirubra</i> .. ..   | - 9                       |
| Asafoetida (lowest) .. ..   | <i>Ferula Foetida</i> .. ..          | 1 6                       | Cinnamon, bark .. ..        | <i>Cinnamomum</i>                  |                           |
| Asthma Weed .. ..           | <i>Euphorbia Pilulifera</i> .. ..    | - 4½                      |                             | <i>Zeylanicum</i> .. ..            | - 7                       |
| Asoka Bark .. ..            | <i>Saraca indica</i> .. ..           | - 5                       | Cloves, flower-buds .. ..   | <i>Eugenia caryophyllata</i>       | 1 5                       |
| Atees, root .. ..           | <i>Aconitum</i>                      |                           | Colocynth, pulp .. ..       | <i>Citrullus Colocynthis</i> .. .. | - 6                       |
|                             | <i>heterophyllum</i> .. ..           | - 8                       | Conessi, bark .. ..         | <i>Holarrhena</i>                  |                           |
| Ayapana, herb .. ..         | <i>Eupatorium Ayapana</i> .. ..      | - 5                       |                             | <i>antidysenterica</i> .. ..       | - 3                       |
| Baberang Seeds .. ..        | <i>Embelia ribes and robusta</i>     | - 2½                      | Coriander, fruits .. ..     | <i>Coriandrum Sativum</i> .. ..    | - 2½                      |
| Bael Fruit .. ..            | <i>Aegle Marmelos</i> .. ..          | - 6                       | Cotton, Devil's, bark .. .. | <i>Abroma Augusta</i> .. ..        | - 6                       |
| Bdellium, Indian (average)  | <i>Commiphora Mukul</i> .. ..        | 2 3                       | Creat, herb .. ..           | <i>Andrographis</i>                |                           |
| Belladonna Leaves .. ..     | <i>Atropa Belladonna</i> .. ..       | - 10                      |                             | <i>paniculata</i> .. ..            | - 5                       |
| Belladonna Root .. ..       | <i>Atropa Belladonna</i> .. ..       | - 8                       | Croton Seeds .. ..          | <i>Croton Tiglium</i> .. ..        | - 4                       |
| Black Pepper .. ..          | <i>Piper nigrum</i> .. ..            | - 6                       | Dandelion Roots .. ..       | <i>Taraxacum officinale</i> .. ..  | - 7                       |
| Cantharidis, Indian .. ..   | <i>Cantharis</i> and <i>Mylabris</i> |                           | Dill Seeds .. ..            | <i>Peucedanum graveolens</i>       | - ½                       |
|                             | <i>species</i> .. ..                 | 3 6                       | Dita Bark .. ..             | <i>Alstonia Scholaris</i> .. ..    | - 4                       |
| Capsicum, fruits .. ..      | <i>Capsicum frutescens</i> and       |                           | Eucalyptus Oil .. ..        | <i>Eucalyptus globulus</i> .. ..   |                           |
|                             | <i>minimum</i> .. ..                 | - 5                       |                             |                                    |                           |



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|-------------------------|--|---------------------------|-----------------------------|--|---------------------------|
|                         |  | s. d.                     |                             |  | s. d.                     |
| nel, seeds .. ..        | <i>Fœniculum Vulgare</i> ..                      | — 4                       | Nux-vomica, seeds ..        | <i>Strychnos nux-vomica</i> ..             | — 1½                      |
| glove, leaves .. ..     | <i>Digitalis purpurea</i> and other species ..   | 1 —                       | Oldenlandia, herb ..        | <i>Oldenlandia corymbosa</i> ..            | — 4                       |
| tian, Indian .. ..      | <i>Picrorrhiza Kurroa</i> ..                     | — 5                       | Orange Peel .. ..           | <i>Citrus aurantium</i> ..                 | — 6                       |
| ger .. ..               | <i>Zingiber officinale</i> ..                    | — 4                       | Pedanium, fruits ..         | <i>Pedanium murex</i> ..                   | — 4                       |
| ncha, stems .. ..       | <i>Tinospora cordifolia</i> ..                   | — 3                       | Pennywort, Indian, herb..   | <i>Hydrocotyle asiatica</i> ..             | — 10                      |
| n Arabic, Indian ..     | <i>Acacia arabica</i> ..                         | — 4                       | Podophyllum, Indian, roots  | <i>Podophyllum Emodi</i> ..                | — 9                       |
| n Arabic, True .. ..    | <i>Acacia Senegal</i> ..                         | — 7                       | Pomegranate, rind ..        | <i>Punica granatum</i> ..                  | — 6                       |
| n Olibanum, Indian ..   | <i>Boswellia Serrata</i> ..                      | 1 2                       | Rhubarb, Indian, rhizomes   | <i>Rhenm Emodi</i> and other species ..    | 1 —                       |
| n Tragacanth, Indian..  | <i>Astragalus heratensis</i> ..                  | — 7                       | Rosebuds .. ..              | <i>Rosa damascena</i> ..                   | 1 —                       |
| jan Oil.. ..            | <i>Dipterocarpusturbinatus</i>                   | 1 —                       | Sappanwood .. ..            | <i>Cæsalpinia Sappan</i> ..                | — 3                       |
| bane, leaves .. ..      | <i>Hyoscyamus niger</i> ..                       | — 8                       | Sarsaparilla, Indian, roots | <i>Hemidesmus indicus</i> ..               | — 6                       |
| weed .. ..              | <i>Bærhaavia diffusa</i> ..                      | — 5                       | Senna, leaves (lowest) ..   | <i>Cassia Angustifolia</i> ..              | — 3                       |
| rophila, herb .. ..     | <i>Hygrophila spinosa</i> ..                     | — 6                       | Senna, pods .. ..           | <i>Cassia Angustifolia</i> ..              | — 4½                      |
| irity Seeds .. ..       | <i>Abrus precatorius</i> ..                      | — 6                       | Soapnut .. ..               | <i>Sapindus mukorossi</i> ..               | — 3½                      |
| bul Seeds .. ..         | <i>Eugenia Jambolana</i> ..                      | — 7                       | Spogel Seeds .. ..          | <i>Plantago Ispaghula</i> ..               | — 3½                      |
| le Geranium, bark ..    | <i>Ixora coccinea</i> ..                         | — 6                       | Squill, Indian, bulbs ..    | <i>Scilla indica</i> ..                    | — 4                       |
| dana Seeds .. ..        | <i>Ipomœa hederacea</i> ..                       | — 8                       | Stramonium, leaves ..       | <i>Datura Stramonium</i> ..                | — 6                       |
| ela Powder (8 % ash) .. | <i>Mallotus Phillipinensis</i>                   | 4 6                       | Stramonium, seeds ..        | <i>Datura Stramonium</i> ..                | — 8                       |
| atikary, herb .. ..     | <i>Solanum xanthocarpum</i>                      | — 5                       | Sweet Flag, roots ..        | <i>Acorns calamns</i> ..                   | — 4½                      |
| o, Bengal .. ..         | <i>Butea frondosa</i> ..                         | — 8                       | Tamarind, fruit-pulp ..     | <i>Tamarindus indica</i> ..                | — 2½                      |
| o, Indian .. ..         | <i>Pterocarpus marsupium</i>                     | 2 6                       | Tea, fluff .. ..            | <i>Camellia Thea</i> ..                    | — 4                       |
| oor, meal .. ..         | <i>Scirpus Kysoor</i> ..                         | 1 6                       | Thorn Apple, leaves ..      | <i>Datura fastuosa</i> var. <i>Alba</i> .. | — 4                       |
| non Grass, oil .. ..    | <i>Cymbopogon citratus</i> ..                    | 4 —                       | Thorn Apple, seeds ..       | <i>Datura fastuosa</i> var. <i>Alba</i> .. | — 5                       |
| non Peel .. ..          | <i>Citrus medica</i> var. <i>limonis</i> ..      | 1 —                       | Turpentine, Indian ..       | <i>Pinus longifolia</i> ..                 | — 8                       |
| seed, oil .. ..         | <i>Linum usitatissimum</i> ..                    |                           | Turpeth Root .. ..          | <i>Ipomœa Turpethum</i> ..                 | — 8                       |
| lar, root, bark .. ..   | <i>Calotropis gigantea</i> and <i>procera</i> .. | 1 —                       | Valerian, rhizomes ..       | <i>Valeriana Wallichii</i> ..              | — 3½                      |
| ce .. ..                | <i>Myristica fragrans</i> ..                     | 2 10                      | Vasaka, leaves .. ..        | <i>Adhatoda vasica</i> ..                  | — 4                       |
| gossa Bark .. ..        | <i>Melia azadirachta</i> ..                      | — 3                       | Water Nut, meal .. ..       | <i>Trapa natans</i> ..                     | — 4                       |
| rking Nut .. ..         | <i>Semecarpus anacardium</i>                     | — 1½                      | Winter Cherry, herb ..      | <i>Withania somnifera</i> ..               | — 9                       |
| adow Saffron, corm ..   | <i>Colchicum luteum</i> ..                       | 2 8                       | Worm Seed, Indian ..        | <i>Artemisia Maritima</i> ..               | 1 2                       |
| robalan, chebulic .. .. | <i>Terminalia chebula</i> ..                     | — 1                       | Zedoary .. ..               | <i>Curcuma Zedoaria</i> ..                 | — 4                       |
| tmeg, seeds .. ..       | <i>Myristica fragrans</i> ..                     | 1 5                       |                             |  |                           |



# *Representative* DRUGS of INDIA

**I**T has recently been remarked by a prominent political economist that India is a rich country inhabited by poor people. Nothing can be truer than this. Indeed, the poverty of India is mainly due to the inability of the Indians to utilise the vast resources of the country. Among these resources, drugs may be an insignificant item compared with the agricultural produce, minerals, hides and skins, etc., but they are none-



SALE COUNTER, HEAD OFFICE.

the-less worthy of consideration, when it is remembered that in 1922-23 Rs. 3,67,76,166 worth of drugs, medicines and chemicals were imported into the country, which is below the normal of pre-war years. Against this, she exported only Rs. 62,64,501 worth of drugs. Had this subject engaged the earnest attention of the Indians, the country might not only have been self-dependent in the matter of drugs, but would have been able to export its surplus materials in considerable quantities.

Broadly speaking, the number of drugs used in India by practitioners of the different systems of medicine would not be less than 500. But the



use of many of these is confined to particular localities and particular systems of medicine and is gradually falling off. It is now nearly half-a-century since the Allopathic System of medicine was introduced into India and its progress, like that of the Western System of education, has been very rapid, especially among the educated community in nearly all parts of India. The drugs included in the British pharmacopœia and preparations thereof are, consequently, more popular than all the other classes of drugs.

Apart from the question whether all the British pharmacopœia drugs are suited to the Indian constitution, it is an important point for consideration from a business point of view whether the more efficacious British pharmacopœia drugs can be produced or procured within the country. We are now convinced that, as regards the principal raw drugs, the Indian pharmacist need not go to the distant foreign markets for the majority of them. The British pharmacopœia includes about 160 raw drugs, of which 85 are now found in India, either wild in the extensive forests, or cultivated in fields and gardens. Out of the remaining 75 drugs, 35 are truly foreign, while 19 are available in the Indian markets and 21 may be substituted by Indian drugs of equal therapeutical efficiency.

Of the foreign drugs, e.g., Serpentry, Scammony, Gelsemium, Hammamelis, etc., we need not say much, as we are dealing principally with Indian drugs here. Regarding drugs which, though not produced in the country, are commonly found in the markets, we should like to observe that from time immemorial some of them have been regularly coming to the Indian seaports. In fact, owing to their re-export from India, such drugs as Camphor and Cinnamon of Japan and China, Asafoetida of Persia, Tragacanth of Turkey, etc., were mistaken in the past as drugs of Indian origin. This group comprises some important drugs, a few of which may be found in our collections :—

*Commiphora Myrrh* (*African Bdellium*).—Used from ancient times as detergent, astringent and aperient, and externally as disinfectant in sores and ulcers.

(1) *Commiphora Mukul* of Central India yields the Indian Bdellium, which is also used for the same purposes as also as an incense.

(2) *Ferula Foetida* (*Asafoetida*).—This well-known antispasmodic and stimulant drug is found in the trade in several grades. The product of *F. Alliacea* is largely used as a condiment. There is a considerable trans-frontier trade from Afghanistan and import trade from Persia in this article.

*Astragalus Gummifer* (*Tragacanth*).—Popularly used as a pectoral and demulcent in urinary affections. Imported from Persia and Asiatic Turkey. Indian tragacanth derived from (3) *A. heratensis* possesses the same properties.

We now come to the consideration of those foreign drugs which may not prove to be indispensable. Already some trials have been made with the Indian substitutes of these drugs, and, with the advancement of research in the pharmacology of these drugs, there is reason to believe that their use will be based on experimental data. Some of the drugs of this type are



mentioned here, the names of the British pharmacopœia drugs in whose place they may be used being enclosed in brackets.

(4) *Tribulus terrestris* (*Acrostaphylos uva-ursi*).—In Ayurveda it is described as cooling, diuretic, tonic and aphrodisiac. “The action of the drug on the mucous membrane of the urinary passage appears to resemble closely that of Buchu and uva-ursi.”—Dymock, Pharm. Ind., Vol. 1, page 244.

(5) *Eupatorium Ayapana* (*Anthemis nobilis*).—Like chamomile it is stimulant and tonic in small doses and laxative in large ones; hot infusion emetic and diaphoretic.

(6) *Colchicum luteum* (*Colchicum autumnale*).—This drug is as good a deobstruent, alterative and aperient as the foreign one. It is used in gout, rheumatism and in spleen and liver complaints.

(7) *Dipterocarpus turbinatus* (*Copaifera Spp*).—It has been used in the place of copaiba with a fair amount of success. Its action is similar to that of



HEAD OFFICE AND SOME DEPARTMENTS.

copaiba in gonorrhœa, and it is used in the treatment of the same disease in Assam and South India. Another Indian substitute for copaiba is the oleo-resin of (8) *Hardwickia pinnata*, which was found to be as efficacious as copaiba by Schimmel & Co. (*vide* their reports 1905 and 1907).

(9) *Lobelia nicotianaefolia* (*Lobelia inflata*).—It has now been proved beyond doubt that Indian Lobelia is fully as efficacious as the foreign one in the treatment of Asthma, whether the disease be purely spasmodic or associated with pulmonary emphysema and chronic bronchitis, heart-disease, etc.

(10) *Xanthium Strumarium* (*Pilocarpus microphyllum*).—From a large number of trials made it appears that the herb is like Jaborandi, sudorific, sialagogue and slightly diuretic. It is considered to be sedative and diaphoretic by Ayurvedic practitioners.



(11) *Acalypha indica* (*Polygala Senega*).—As an expectorant there is little doubt that this drug ranks with senega. In addition to this, its use as emetic and laxative for children is quite well known throughout the country.

(12) *Viburnum Fœtidum* (*V. prunifolium*).—In all uterine diseases involving loss of blood and threatened abortion, the Indian drug is as beneficial as its American congener.

(13) *Erodium cicutarium* (*Hydrastis canadensis*).—The costly American drug can be easily replaced by the Indian one. In the Year Book of Pharmacy, 1896, it is stated that a competent Russian authority has observed that *E. cicutarium* is a useful styptic in uterine hæmorrhages, its action being rapidly manifested even in cases where ergot and hydrastis failed. Dr. J. A. Van Dongen, of Amsterdam, has subsequently confirmed these results.

So much regarding the British pharmacopœia drugs which are strictly speaking extra-Indian, but some of which are common in bazaars, while for others efficient Indian substitutes may be found. The remaining 85 drugs may be conveniently divided into four sections, viz. : wild plants, field crops, garden or plantation crops and plants recently introduced or of limited cultivation. In the first section some of India's well-known drugs find their place. We mention here a few of considerable commercial importance :—

(14) *Acacia arabica* ; gum and bark.—The bark is powerfully astringent and used in the place of oak bark. The use of the gum and bark for industrial purposes is much larger than their use in medicine.

(15) *Acacia Catechu*.—Catechu is considered as cooling, astringent and digestive by the Ayurvedic practitioners. Externally it is applied to boils, ulcers, and cutaneous eruptions. Like the foregoing, the wood extract of this species has a larger field in the tanning industry than in medicine.

(16) *Aegle marmelos*.—The use of Bael-fruit as an astringent, digestive and stomachic is very wide. It is specially used in diarrhœa and dysentery. In the form of pickle, preserve or sherbet it finds its way to nearly every household. The dried slices of almost mature fruits retain their medicinal properties for a considerable time.

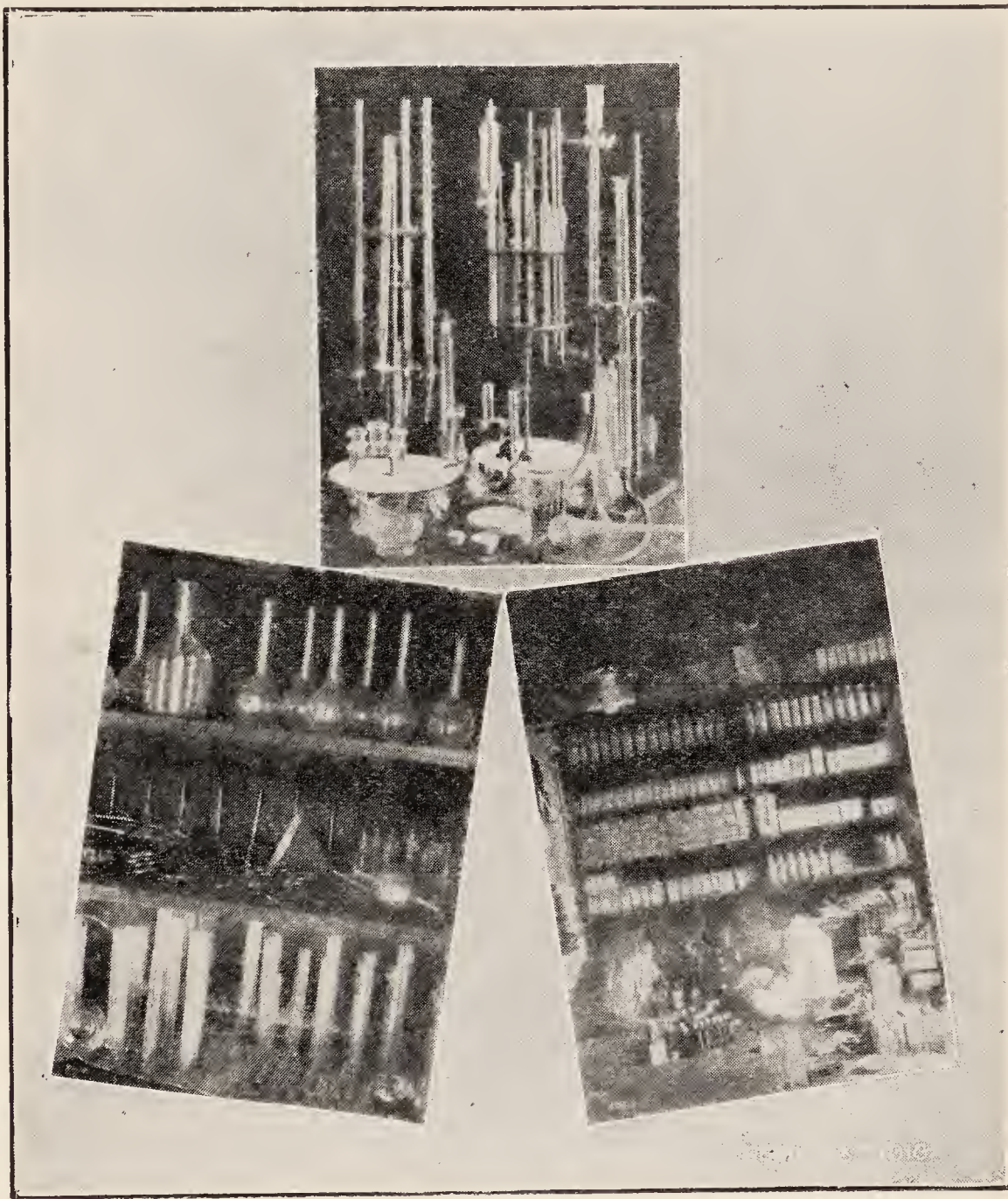
(17) *Atropa Belladonna*.—The action of Belladonna and atropine is quite well known. Until a few years ago Indian druggists depended on foreign supplies for Belladonna roots and leaves and their preparations. To-day, some amount of Belladonna is being exported every year. With proper exploitation and cultivation enough crude Belladonna to meet the demands of the world's trade may be produced in India.

(18) *Aconite*.—True *Aconitum Napellus* is not found in India, the nearest Indian relation to it being *A. Soongaricum* of Gilgit. *A. chasmanthum* of the Western and *A. Spicatum*, including *A. ferox*, of the Eastern Himalayas, are, however, extensively used with the same results. *Atees*, a non-poisonous form (19) (*A. heterophyllum*), possesses some reputation as a bitter tonic, antiperiodic and aphrodisiac.

Among the (20) Indian Daturas or Thorn-apple, *D. fastuosa* Var. *Alba*, *D. metel* and *D. Stramonium* have found their places in the British pharmacopœia. The leaves are smoked in asthma. Locally the leaves are applied in lumbago, rheumatic swellings, etc. The seeds are considered to be more powerfully narcotic.



The anthelmintics popularly used are (21) *Embelia ribes* and *robusta* and (22) *Punnica granatum*. The former two, besides being efficacious in expelling tape-worms, possess stomachic and stimulant properties. Pomegranate fruit rind is useful in long-standing diarrhoea and dysentery. The root bark contains pelletierine, which is a well-known remedy for tape-worms. Malefern (23) *Dryopteris filix-mas*, employed for the same purposes, has also been found growing in the Eastern Himalayas, especially along the Sikkin border. Mention should also be made of Artemisias, some species of which, notably (24) *A. Brevifolia*, of Kashmir, have been found to contain  $\frac{1}{2}$ –1 per cent. of Santonine. It is quite probable that with proper investigation some of the several species



A CORNER OF LABORATORY.

of Artemisias growing at high altitudes in the North-West Frontier of India will be found to contain commercially exploitable quantities of Santonine.

(25) *Taraxacum officinale* is a common plant in the lower ranges of the Himalayas. Its use as a hepatic stimulant, diuretic and diaphoretic is gradually increasing, and it is being largely employed as a household remedy.

(26) *Cassia fistula*.—The pulp of the fruit is a well-known purgative, and it is in use both in the East and West. Properly prepared Indian Cassia-pulp is quite equal to the W.I. product, though the latter generally fetches a higher value.



(27) *Citrullus Colocynthis*.—The pulp of the fruit is purgative and is specially efficacious in cases of obstinate constipation. The Indian fruits generally contain less pulp than those of the Mediterranean shores, but they are, therapeutically, equally active.

(28) *Hyoscyamus niger* and *reticulatus* are both found in India. The seeds are generally known as “Khorasani ajowan.” On analysis the leaves have been found to contain as much active principle as henbane of other countries.

(29) *Picrorrhiza Kurroa*.—It is an efficient substitute for *Gentiana lutea*, and as a bitter tonic its action is even more pronounced.

(30) *Plantago Ispaghula*.—In chronic diarrhœa, dysentery, gonorrhœa and piles, the seeds always produce beneficial results by their cooling and demulcent properties. This simple remedy is widely used in India, and even Europeans have learnt to value the seeds in the treatment of obstinate bowel complaints.

(31) *Podophyllum Emodi*.—The Indian podophyllum is richer in podophyllin contents than the American *P. peltatum*. By several pharmacological tests made during recent years, its therapeutical merit has been thoroughly proved. It is a cholagogue, aperient and a biliary purgative of a powerful nature.

(32) *Pterocarpus marsupium*.—The gum or Indian Kino is official both in the British and U.S.A. Pharmacopœias. A closely allied gum is that from (33) *Butea frondosa*. Both are astringent and employed in diarrhœa and dysentery. In moderately large doses Bengal Kino is used to check hæmorrhage from the stomach and bladder.

(34) *Rheum Emodi*.—Of late a considerable quantity of rhubarb of Himalayan origin has been put in the market. The rhizomes generally suffer from the defect of indifferent preparation, but therapeutically they are as effective as the Tibetan and Chinese drug. Rhubarb possesses stomachic, tonic and cathartic properties, and as such is used in atonic dyspepsia, simple diarrhœa, etc.

(35) *Strychnos nux-vomica*.—India is practically the only source of supply of nux-vomica seeds to the world's trade. There are several grades of seeds. The active principle, strychnine, is official in the pharmacopœias of all advanced nations. As a powerful nervine tonic and stimulant to the spinal chord, nux-vomica has few rivals, if any.

(36) *Swertia Chiretta*.—There are many varieties of the drug to be found in the market, the best coming from Nepal Terai. It is very largely used in indigestion, loss of appetite, atonic dyspepsia, liver disorders, etc., where its antibilious, stomachic and tonic properties render it an inestimable remedy.

(37) *Tamarindus indica*.—The medicinal use of tamarind is far less compared with its use as a condiment. The fruit-pulp, however, is regarded as cooling, carminative and laxative, especially when it is old. It is an excellent antiscorbutic.

(38) *Tharaktogenos Kurzii*.—India is the principal source of supply of chaulmoogra seeds to the world's trade. Although it has been replaced in Japan and America by certain species of *Hydnocarpus*, the chaulmoogra oil still remains the premier remedy for leprosy. It has also given good results in scrofula, skin diseases and chronic rheumatism.

(39) *Terminalia Chebula*.—As a tan-stuff a far greater quantity of myrobalans is consumed in the country and exported abroad than as a drug. The



medicinal use of the young fruits is practically confined to India. Myrobalans possess antibilious and purgative properties. The fruits are a popular household remedy for liver complaints, constipation and disorders of digestion.

(40) *Scilla indica*.—The stimulant, expectorant and diuretic properties of the foreign squill are fully in evidence in the Indian drug.

(41) *Valeriana Wallichii*.—The Indian Valerian is therapeutically as active as *V. officinalis* of Europe. It is employed in diseases, having nervous and hysterical symptoms as a stimulant and antispasmodic.

(42) *Croton Tiglium*.—Croton oil seeds have been used from very ancient times by Ayurvedic practitioners. The oil is internally used in cases of apoplexy,



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mania, lock-jaw, etc. Externally a liniment prepared by mixing three to four times its volume of any bland oil is employed as a powerful rubefacient and counter-irritant.

(43) *Boswellia Serrata*: Indian olibanum.—The gum is refrigerent, diuretic, emmenagogue and ecboic, and is useful in doses of 5–40 grs. in amenorrhœa, dysmenorrhœa, gonorrhœa, ringworm and apthæ. There is a good deal of use of the gum-resin as an incense in religious ceremonies.

(44) *Alstonia Scholaris*.—The astringent, tonic and febrifuge properties of the bark is ascribed to the active principle, ditaine, which according to some



authorities is better than quinine sulphate, as there are no disagreeable secondary symptoms. Dita bark is also used in diarrhoea and dysentery.

(45) *Cæsalpinia Sappan*.—Sappan wood is a powerful astringent and is largely employed in bowel complaints, as well as certain skin diseases in the form of infusion or decoction. It possesses properties similar to that of log-wood and may be used in its place.

(46) *Ipomœa Turpethum* and (47) *I. hederacea* are commonly used as purgatives, and they contain resinous principles which are analogous to those found in *I. purga* tubers. The seeds of the former and the root of the latter are, however, not generally used alone, but in combination with ginger, cream of tartar or other suitable materials.

(48) *Pinus longifolia*.—The bulk of turpentine now produced in India is derived from the oleo-resin known as “gandha-biroja” obtained from the Cheer pine. Every year the production of turpentine is increasing, and Indian Turpentine is already being exported to Java and other places. Pine tar has some reputation as a remedy in chronic bronchitis and phthisis.

The next group of drugs is mostly grown as field-crops in this country and commercially some of them form important agricultural produce of the land, e.g., ground nut, cotton, sessamum :—

(49) *Linseed*, (50) *Castor Seed*, etc. Indian hemp and opium poppy are, however, grown for medicinal purposes, although (51) *Poppy Seed* is an important item of Indian oil-seed trade. (52) *Cannabis Sativa* is wild in many parts of India but “ganja” is derived from plants cultivated in certain places in Bengal (Nowgong), Madras and Bombay. The cultivation of (53) *Papaver Somniferum* is decreasing. Indian opium has, however, been found to contain the same proportion of alkaloids as the Turkish product. During the war Indian opium formed the mainstay of morphine-manufacturers of England, there being very little supply of the Turkish, Silesian, Serbian and Chinese drug. Poppy seeds are no less valuable as yielding a bland edible oil than opium itself. Hemp seeds are not at present used in India in any appreciable quantity, but these may be very profitably utilised as a bird-food or for a good varnish oil. The true gum arabic or (54) *Acacia Senegal* is grown in Sind and the neighbouring arid tracts of Rajputana. The supply of the gum is limited now, but the cultivation of the tree is spreading, and in future enough gum, at least for medicinal purposes, will be available.

A lot of plants yielding spices and condiments are grown in India, either as pure or mixed crops, of which the following are more important from a medicinal point of view :—

(55) *Ajowan Seeds* (*Carum Copticum*).

(56) *Coriander* (*Coriandrum Sativum*).

(57) *Fennel* (*Foenioulum Volgare*).

(58) *Dill* (*Peucedanum Graveolens*).

Thymol of a good quality has already been produced in India, but distillation of essential oil from the above as well as similar plants is still a neglected industry in India, although possessing a bright outlook. As regards other notable drugs of this class, ginger :—

(59) *Zingiber officinale*, of the very best quality, is grown in South India.



Cochin ginger is peeled and limed. Prepared in the same way for the market ginger produced in other parts of the country may prove equally attractive to the trade.

(60) *Capsicum*, *Capsicum frutescens*, is widely cultivated throughout India, and some of its varieties are excellently adapted for the manufacture of capsicine.

Another group of plants used in medicine, may be regarded as essentially garden or plantation crops. Among these the most important is :—

(61) *Cinchona*, some half a dozen species of which are now being cultivated in Darjeeling, Nilgiri, Mergui and Tavoy. Recently there have been official attempts to extend the area under this crop as India has still to import a large



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quantity of the Java bark for the manufacture of quinine. A number of crops of this class is grown in South India, of which special mention may be made of :—

- (62) Tinevilley senna (*Cassia Angustifolia*).
- (63) Cinnamon (*Cinnamomum Zeylanicum*).
- (64) Lemon grass (*Cymbopogon citratus* and *Flexuosus*).
- (65) Cardamom (*Ellettaria Cardamomum*).
- (66) Coca (*Erythroxylon Coca*).
- (67) Eucalyptus (*Eucalyptus globulus* and other species).
- (68) Cloves (*Eugenia caryophyllata*).
- (69) Nutmeg (*Myristica fragrans*).
- (70) Black pepper (*Piper nigrum*).



It should be noted here, that besides the cinnamon mentioned above, there are two other wild plants which yield the cinnamon bark of commerce, viz. : *Cinnamomum Tamala* and *C. obtusifolia*. The leaves of the latter are also used as condiment :—

(71) *Tea* is the premier plantation crop in India and the waste involved in the preparation of the leaves may be utilised in manufacture of caffeine and tannic acid.

A great many oranges, (72) *Citrus aurantium*, are grown in different parts of India and the very best quality of orange peel is available, if care is exercised in preparing the same. The same may also be said of lemon (73) *Citrus medica* var. *limonis*, which is wild in many localities—Lemon stocks are used in the Central Provinces and Bombay for grafting oranges. In fact, oranges, limes and lemons are so plentiful in certain centres, e.g., in Assam, that the manufacture of all sorts of citrus-products may be undertaken without any fear of running short of raw materials. The quantity of Indian roses (74) *Rosa damascena* is on the average inferior to the Bulgarian ones, but a large quantity of flowers is annually produced in centres like Ghazipur, Aligarh, Amritsar, etc. A great field lies before any enterprising capitalist in the development of rose-industry of India.

Regarding medicinal plants which have been recently introduced, or whose cultivation is limited, we may first of all mention :—

(75) *Psychotria Ipecacuahna*, of which there are over half-a-million plants now in the Government gardens in Darjeeling. It will be still some time before the public can actually get a supply from plants grown in the country, as their growth is very slow, but a nucleus has been created round which Ipecac plantations will grow in future. Among other drug plants which were introduced just before or during the war the success of the following are out of question now :—

(76) Foxglove (*Digitalis purpurea* and other species).

(77) Jalap (*Ipomœa purga*).

(78) Broomtops (*Cytisus scoparius*).

(79) American wormseed (*Chenopodium ambrosoides* var. *anthelminticum*).

We have hitherto dealt mainly with the British pharmacopœia drugs, but India possesses a rich medicinal flora and she has drugs of her own which have been used from time immemorial with successful results. If at any time cheap yet efficacious medicines can be brought to the door of the poorest villager living far away in the interior, it would be by means of more scientific and greater utilisation of these kinds of drugs and by nothing else. We give below short notes on some indigenous drugs which are now finding favour with the Allopathic and Ayurvedic practitioners alike.

(80) *Abroma Augusta*.—The root bark is employed in the treatment of dysmenorrhœa.

(81) *Abrus precatorius*.—The seeds, decorticated and finely ground, are used in *pannus cornea* and granular lids. Seeds powdered and boiled with milk are regarded as tonic and aphrodisiac.



(82) *Acorus calamus*.—The rhizomes possess stimulant aromatic and carminative properties and are used in dyspepsia, flatulence, cough, fever and colic. As an insecticide it is valuable in checking ravages of moths, fleas, etc.

(83) *Adhatoda vasica*.—Nearly all the parts of the plant are employed in medicine. A liquid extract of the leaves is useful in cough, chronic bronchitis, asthma and early stages of consumption. A decoction of the leaves also possesses insecticide properties.

(84) *Andrographis paniculata*.—The herb is very useful in dyspepsia, general debility and specially in infantile liver. It is a household remedy throughout Bengal.

(85) *Bærhoavia diffusa*.—The herb is much used by Ayurvedic practitioners as diuretic, expectorant and antispasmodic. In dropsy it is used both internally and externally and gives speedy relief.

(86) *Calotropis gigantea* and *procera*.—The root bark is alterative, tonic, diaphoretic and emetic. It is employed in the treatment of dysentery, diarrhoea, syphilitic ulcerations, chronic rheumatism, ascitis and elephantiasis. The milky juice is used in ringworm and piles. A fluid extract of the leaves is beneficial in intermittent fever.

(87) *Curcuma angustifolia*.—As an article of diet it is equal to Maranta or Canna arrowroot and is largely used as an invalid food. Its demulcent and cooling properties are remarkable, and it is therefore very successfully used in dysuria, gonorrhoea and painful micturition.

(88) *Engenia Jambolana*.—The bark, owing to its astringent quality, is useful in bowel complaints, sore-throat and spongy gum. The liquid extract of the seeds has given good results in diabetes. The vinegar prepared from the ripe fruit is much used as a stomachic and carminative.

(89) *Euphorbia Pilulifera*.—The drug is recently being exported in some quantity. In India it is used in the lung and bowel complaints of children. It is, however, an efficacious remedy in asthma and dysentery.

(90) *Hemidesmus indicus*.—In Ayurvedic medicine the roots of the Indian sarsaparilla have long been used as a blood purifier, tonic and alterative. It undoubtedly possesses some of the sudorific and other properties of the true sarsaparilla, and may be conveniently used in the place of the latter in syphilitic affections and general debility.

(91) *Holarrhena Antidysenterica*.—Although Conessi bark has fallen into some disrepute owing to adulteration with other barks, still it is highly esteemed in the treatment of chronic diarrhoea and dysentery. The bark, like the seeds, possesses anthelmintic and febrifuge properties.

(92) *Hydrocotyle asiatica*.—As an alterative tonic and local stimulant, the herb has been found to be useful in a number of diseases—eczema, scrofulous and syphilitic ulcers, abscess, chronic rheumatism, infantile diarrhoea and amenorrhoea. An ointment prepared from the leaves is beneficial in enlarged scrotum and elephantiasis.

(93) *Hygrophila Spinosa*.—The herb has the reputation of being a good bitter tonic, diuretic and demulcent. It is commonly employed in the treat-



ment of genito-urinary and dropsical affections, rheumatism, jaundice and anarsarca.

(94) *Ixora coccinea*.—It has now been thoroughly proved that the root and flowers of this pretty shrub is a valuable remedy in acute dysentery. It may be taken in the form of tincture or pill.

(95) *Mallotus Phillipinensis*.—Kamela powder or the glandular hairs on the fruit of the tree are used to expel tape worms. It is also a valuable dye-stuff.

(96) *Melia azadirachta*.—The use of neem bark and oil from seeds may be traced to remote antiquity. The bark is astringent, tonic and antiperiodic. Recently the active principle of the bark, margosic acid, is being successfully employed in the treatment of obstinate skin diseases including leprosy. The antiseptic action of the oil is very pronounced, and the soap made from it is as good as carbolic soap.

(97) *Mylabris* species.—The Indian cantharidis beetles yield from 0·73 to 1·92 per cent. of cantharidin, and in exceptional cases up to 2·02 per cent., which is much greater than that of the Spanish flies, containing 0·7 per cent. only. The Indian material is consequently worthy of the attention of foreign manufacturers.

(98) *Oldenlandia corymbosa*.—The herb is much used by Ayurvedic practitioners singly or combined with other drugs in the treatment of low forms of fever associated with liver-disorders.

(99) *Pedaliium Murex*.—The infusion of the seeds is demulcent and diuretic and is useful in gonorrhœa, dysuria, spermatorrhœa, incontinence of urine, strangury and colic.

(100) *Sapindus trifoliata*.—The fruits known as soap nut, are used as emetic and expectorant. The main constituent appears to be saponin to the extent of nearly 12 per cent. A plaster prepared with vinegar is used in reptile bites and scrofulous swelling with good results.

(101) *Saraca indica*.—The bark of this handsome tree is largely used in uterine affections especially menorrhagia. A decoction of the bark is beneficial in internal hæmorrhoids.

(102) *Semecarpus anacardium*.—The pericarp contains a black, oily juice which leaves an indelible stain on cotton fabrics with lime water as mordant. Hence the name marking-nut. The juice is a powerful escharotic and is used in minute doses mixed with some bland oil in scrofulous and syphilitic affections, palsy, epilepsy and other nervous disorders. The ripe nuts are regarded as stimulant and digestive.

(103) *Solanum anthocarpum*.—In cough, catarrhal fever and pain in the chest the liquid extract of the plant has been found to be very useful. It is also a powerful diuretic.

(104) *Tinospora cordifolia*.—A liquid extract of root and stem is regarded as bitter tonic, alterative, antiperiodic and diuretic. In fevers, secondary syphilis, rheumatism, inflamed bladder and enlarged spleen, this common drug is used with great success. It is also useful in chronic gonorrhœa and leucorrhœa.

(105) *Trapa natans*.—The green fruit and the powder of the ripe fruit of the



water-nut are extensively used in certain parts of India as a food. The meal is as nutritious as that of Indian corn. Medicinally the fruits are used in bilious affections with diarrhoea.

(106) *Withania somnifera*.—The plant has long been used as diuretic, deobstruent, tonic, alterative and aphrodisiac. It gives beneficial results in debility due to old age.

(107) *Alocasia indica*.—This is a large arum cultivated in some parts of India, specially Bengal. In the fresh state the root stock is peeled and slices boiled and eaten like potatoes. The powder prepared from dried slices may be kept for a long time without deterioration. It is mild laxative and diuretic and is very useful in habitual constipation, piles and anasarca. As an invalid food it possesses the recommendation of being light and nutritious ; mixed with wheat flour the meal may be made into very light bread.

(108) *Amorphophallus companulatus*.—This is also another species of arum which is much cultivated in Central India and Baroda. As its Sanskrit name “*Arsoghna*” indicates, it is considered to be a sovereign remedy in piles. It is largely used both as a green vegetable and in the form of preserves.

(109) *Scirpus Kysoor*.—The wild “*Kesurs*” growing on the coasts of India have often been utilised as a famine-food. The bread-stuff from the cultivated species is both sweet and wholesome, the amount of nitrogen present varying from 1.07 to 1.39 per cent. The tubers deserve more attention as a food-stuff.

The above are only a few examples of the numerous drugs which are being used by all classes of medical practitioners in alleviating the pains of the suffering humanity in India, even to-day. The burning topic of the present day is not to discard all these drugs, but to weed out the less efficient among them and to undertake a pharmacological study of the remainder. Our own experience teaches us that the younger generation of the Indians is slowly but surely waking up to the urgent necessity of the utilisation of the Indian indigenous drugs. To keep pace with the times we have been obliged to add every year to the range of our preparations of Indian drugs, some of which are exhibited here.

To stimulate the interest of foreign customers we have exhibited the botanical specimens of some drugs. All these exhibits will, no doubt, go a long way towards demonstrating the drug-resources of India which, in fact, can hardly be equalled by those of any other country. No country can afford to do without certain Indian drugs, mention of which has been made above. But a far larger number of drugs of great potency exists in India than is ordinarily known to the foreign public. Our exhibits, we hope, will help to create a renewed interest in Indian drugs, many of which are only awaiting the attentions of the modern physician and pharmacist to be converted into agents for bringing health and happiness to mankind.



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N.B.—The numbers refer to the serial numbers given against the scientific names of the drugs in the pamphlet and these may also be found on the exhibits.





*The Right Honourable  
The Earl of Reading  
Viceroy & Governor-General of India*

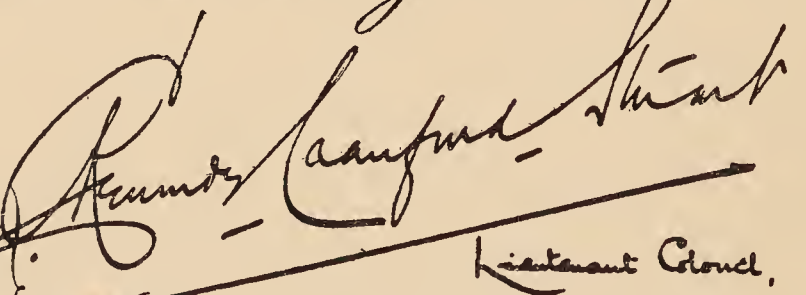
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*Messrs B.K. Paul and Co*

*Chemists and Druggists*

*to His Excellency*

*By His Excellency's Command*

*Military Secretary's Office*  *Lieutenant Colonel,*

*The 19<sup>th</sup> December 1921*

*Military Secretary to the Viceroy.*



**B. K. PAUL & CO.**

CALCUTTA, INDIA.



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